

OPERATING EXPERIENCE WEEKLY SUMMARY

Office of Nuclear and Facility Safety

June 4 - June 10, 1999

Summary 99-23

Operating Experience Weekly Summary 99-23

June 4 - June 10, 1999

Table of Contents

EVENTS	1
1. CRUDE OIL VAPOR FLASH FIRE	1
2. FAILURE TO DISENGAGE CONTAINER LID CAUSES HOISTING NEAR MISS.....	3
3. WATER TANK DROPPED FROM FORKLIFT	5
4. WORK PLAN VIOLATION CREATES NEAR MISS	8
5. WORKERS EXPOSED TO SILICA DUST DESPITE RECENT LESSONS LEARNED.....	10
6. INADEQUATE EMERGENCY RESPONSE TO CHEMICAL SPILL.....	13
7. SPARK FROM CUTTING TORCH CAUSES GRASS FIRE	15
PRICE-ANDERSON AMENDMENTS ACT (PAAA) INFORMATION.....	17
1. PRELIMINARY NOTICE OF VIOLATION AND PROPOSED CIVIL PENALTY AT HANFORD	17
OEAF FOLLOW-UP ACTIVITY	21
1. OPERATING EXPERIENCE WEEKLY SUMMARY TO BE AVAILABLE VIA E-MAIL.....	21



Visit Our Website

The Weekly Summary is available, with word search capability, via the Internet at http://tis.eh.doe.gov/web/oeaf/oe_weekly/oe_weekly.html. If you have difficulty accessing the Weekly Summary at this URL, please contact the ES&H Information Center, 1(800) 473-4375, for assistance. If you have additional pertinent information or identify inaccurate statements in the summary, please bring this to the attention of Jim Snell, (301) 903-4094, or e-mail address jim.snell@eh.doe.gov, so we may issue a correction.

EVENTS

1. CRUDE OIL VAPOR FLASH FIRE

On May 26, 1999, at the Strategic Petroleum Reserve Bryan Mound Site, vapors inside a crude oil pipe were ignited when they leaked from a loosely bolted flange and came into contact with the flame of a propane torch. Workers were using the torch to apply heat to a shrink-wrap on a weld near the flange. Workers observed oil and white smoke coming out of the flange and notified the control room operator. The operator notified emergency response personnel, who went to the scene, cooled the pipe with water from a fire truck, and applied foam to the spilled oil. They also injected nitrogen into the pipe to extinguish the fire and inert and cool the pipe. Approximately six gallons of spilled crude oil was recovered by operators using a vacuum truck. This event is significant because flammable vapors came in contact with an ignition source, causing a fire and an environmental release. (ORPS Report HQ--SPR-BM-1999-0005)

The emergency response team continued to monitor the area to ensure that there was no fire inside the pipe and that the pipe was properly cooled. Operations personnel added more nitrogen to the pipe and vented it. Operations managers pulled the construction permit being used by the contractor. They then reissued it, allowing the contractor to tighten the flange, and began an investigation of the incident.

Investigators determined that workers applying the shrink-wrap were not working under a hot-work permit specific to that task but were using a hot-work permit issued for other welding, cutting, and grinding on that job. The permit required workers to notify the control room operator before beginning hot-work so the operator could verify the absence of flammable gases. Workers did not notify the control room operator before using their propane torch. Investigators have not yet determined if they failed to do so because the requirements of the permit were unclear, or because there was some other miscommunication of the intent or applicability of the permit. Personnel at the Bryan Mound Site reviewed their hot-work permitting processes and procedures in response to a recent similar event at the Strategic Petroleum Reserve Bayou Choctaw Site in which welding operations on a pipe ignited residual petroleum vapors inside the pipe. (ORPS Report HQ--SPR-BC-1999-0001) They conducted the review well before the most recent event and did not find any deficiencies.

NFS has reported other events in the Weekly Summary where flammable vapors came in contact with ignition sources. Some examples follow.

- Weekly Summary 99-18 reported that a mechanical technician at the Los Alamos National Laboratory sustained second-degree burns to his left forearm and hand while welding a container in a welding shop. The technician's welder ignited vapors from ethanol that was used to clean the inside of the container. The ignited vapors flashed, contacting his forearm and charring and burning holes in a cotton glove that he was wearing. Medical personnel treated the technician for second-degree burns. Investigators determined that the container had not been properly purged of vapors before welding. (ORPS Report ALO-LA-LANL-TSF-1999-0001)
- Weekly Summary 98-39 reported that a lubricant ignited when a mechanic at the Hanford Site sprayed it on a truck-mounted drill-head assembly he was repairing. The fire lasted less than 30 seconds, and there were no injuries. Investigators believe that a static electric charge ignited the spray lubricant. The lubricant was an aluminum-complex-based grease that used butane, isobutane, propane, and hexane as propellants. (ORPS Report RL--PHMC-TANKFARM-1998-0117)

- Weekly Summary 98-13 reported that two electricians at the Los Alamos National Laboratory Accelerator Complex received burns to their hands and faces when vapors from an aerosol electrical contact cleaner contacted an electrical space heater, ignited, and formed a fireball. They were using the cleaner while performing maintenance on electrical transformers. Investigators determined that use of the space heater was not specified in the work package, and they believe that no one had performed a chemical hazard analysis before the electricians began work. (ORPS Report ALO-LA-LANL-ACCCOMPLEX-1998-0005)

These events underscore the importance of ensuring that flammable materials and ignition sources are controlled and kept separate to prevent explosion or fire. The safeguards should include purging vessels and pipelines of residual vapors and fumes. When solvents, aerosols, and other flammable substances are being used, it is important to guard against the presence of an ignition source, such as an open flame, spark, friction, or electrostatic discharge. It is also important that workers are trained in the safe use of flammable materials. The following references provide information regarding the safe conduct of hot work.

- DOE/EH-0196, Bulletin 97-3, *Fire Prevention Measures for Cutting, Welding, and Related Activities*, describes the fire protection measures necessary for welding and cutting activities. Guidelines outlined in the bulletin include provisions for (1) management commitments, (2) job safety analysis, (3) permits, (4) isolation/protection of combustibles, (5) personal protective equipment, (6) dedicated fire watcher(s), (7) manual fire-fighting equipment, (8) emergency services, (9) site-specific hot-work policies and procedures, and (10) information sharing.
- 29 CFR 1910.252, *Occupational Safety and Health Standards, General Requirements*, states that "cutting or welding shall be permitted only in areas that are or have been made fire safe." Subpart I, Appendix B, "Non-Mandatory Compliance Guidelines for Hazard Assessment and Personal Protective Equipment Selection," provides compliance assistance to implement requirements for a hazard assessment and the selection of personal protective equipment. It states that walk-downs of the work areas should be performed to identify hazards before work begins.
- American National Standards Institute (ANSI) Standard Z49.1, *Safety in Welding, Cutting and Allied Processes*, paragraph 6.2.2, requires a fire watch when combustible materials are closer than 35 feet to the point of operation. Paragraph 7.2.3 requires ducts used for local exhaust ventilation to be constructed of noncombustible materials and inspected to ensure proper function and to ensure that the internal surfaces are free of combustible residuals.

DOE/EH-0197, Safety Bulletin 97-3, is available at <http://tis.eh.doe.gov:80/docs/bull/links.html>. OSHA regulations can be found at <http://www.osha-slc.gov/>.

Additional fire safety information and NFPA codes and standards can be found at <http://www.nfpa.org/>.

KEYWORDS: fire, hazard analysis, pipe

FUNCTIONAL AREAS: Hazards Analysis, Industrial Safety

2. FAILURE TO DISENGAGE CONTAINER LID CAUSES HOISTING NEAR MISS

On June 3, 1999, at the Idaho National Engineering Laboratory Test Area North, a lifting eyebolt separated from the lid of a shipping container as operators were attempting to remove the lid while it was still fastened to the container. They were using a 10-ton overhead crane and sling to remove what they thought was an 850-lb lid, when what they were really attempting to raise was the combined weight of the container, its contents, and the lid, or approximately 55,000 lb. The operators failed to completely disengage the lid from the container before attempting to remove it. Although all personnel were well clear of the area of the container when the eyebolt failed, this occurrence is significant because of its potential for personnel injury and equipment damage. In addition, the facility will incur the cost of process delays and damage assessments for the crane and the shipping container. (ORPS Report ID--LITC-TAN-1999-0006)

Containers of this type, which are commonly referred to as "ISO" containers, are air-sea-land shipping containers manufactured to International Organization for Standardization specifications. ISO containers are designed to protect and contain their contents in case of fire or accidents. The container used at the Test Area North is loaded and unloaded from the top. Four swivel eyebolts (Figure 2-1), attached to the flat lid with washers and nuts, allow for handling the lid. The lid is held in place with eight latch assemblies (Figure 2-2).



Figure 2-1. Swivel Eyebolt

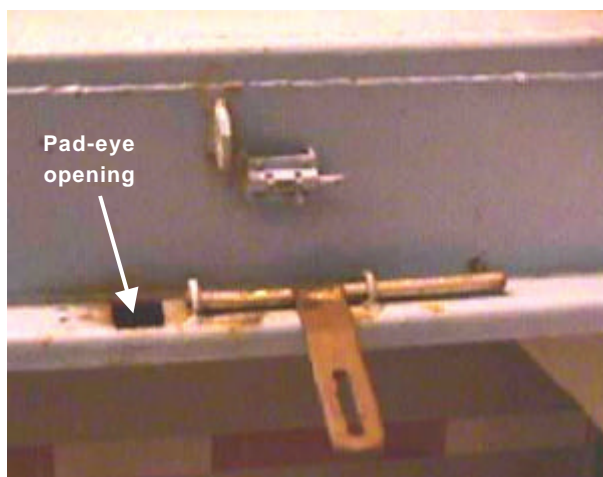


Figure 2-2. Latch Assembly

The incident occurred during a training and verification exercise for a new procedure for receiving and unloading shipping containers. The facility manager initiated an investigation to determine causes for this occurrence and suitable corrective actions. Investigators learned that the operators at the Test Area North were not familiar with this container. Although it has been used elsewhere, it was new to this facility. They determined that the directions provided by the procedure for receiving and unloading the container read only "Disengage the lid from the container." This disengagement is actually a three-step process: remove the pin securing the hasp, open the hasp-retaining latch, and slide the latch bolt out of the pad-eye (Figure 2-2). Operators had not retracted the latch bolts for six of the eight latch assemblies. Investigators also learned that a load cell had not been used with the lifting operation.

Engineers do not believe that the force applied during the occurrence exceeded the capacity of the crane or lifting components. However, operators have tagged the crane out of service until engineers complete a material analysis and inspection. Engineers will also evaluate damage to the ISO container before it is used in facility operations.

OFAF engineers reviewed a similar occurrence involving an attempt to lift a load that had not been completely freed for movement. Weekly Summary 99-21 reported that on May 20, 1999, at the Argonne National Laboratory—East CP-5 Reactor, a nylon lifting sling broke as riggers were attempting to remove a 400-lb beam port casting from the face of a concrete biological shield. The riggers believed the casting was loose from the monolith and attempted three times to remove it; however, the casting was supported from underneath by metal supports that had not been detached. The sling broke during the third attempt. An inspection after the incident showed that the sling had been cut and that the casting had sharp edges that could have done this. Investigators also determined that the riggers had not attached a load cell to the crane. (ORPS Report CH-AA-ANLE-ANLEER-1999-0008)

Failures of rigging or fixtures under load are dangerous not only because of dropped loads but also because they can create missile hazards. These occurrences underscore the need for special attention to work planning and procedures for unique or first-time lifting and hoisting operations. The occurrence at Idaho might have been averted if the procedure had contained appropriate detail, along with a hold point to verify that the container lid was completely free to move before beginning the lift. Also, a load cell would have provided early warning of excessive force. DOE-STD-1090-99, *Hoisting and Rigging*, provides guidance for hoisting and rigging and identifies related codes, standards, and regulations.

- Chapter 3 of the standard, "Preengineered Production Lifts," provides extensive guidance for the development of pre-engineered lifts. Part 3.4, "Procedures," states that a detailed, approved, step-by-step procedure shall be developed for the entire lifting operation and provides criteria for developing a procedure that are consistent with the guidelines given in DOE 5480.19, *Conduct of Operations Requirements for DOE Facilities*, and DOE-STD-1029-92, *DOE Writer's Guide for Technical Procedures*. Paragraph 3.4.3 of *Hoisting and Rigging* states that before its first use in an actual production process, the procedure shall undergo formal verification and validation using walk-throughs or similar methods to ensure that the steps are appropriate and correct.
- Part 12.8 of the standard, "Load-Indicating Devices," states that load-indicating devices are not required in routine operations where loads of known and essentially consistent weight are to be handled. However, their use is required when equipment or tackle configuration could cause binding or friction of the load, which could in turn place greater stress on the hoist or tackle than the apparent hook load.

KEYWORDS: container, hoisting and rigging, industrial safety, lift, procedure

FUNCTIONAL AREAS: Hoisting and Rigging, Industrial Safety

3. WATER TANK DROPPED FROM FORKLIFT

On June 7, 1999, at the Paducah Gaseous Diffusion Plant, a subcontractor worker lifting a 1,200-gal polyethylene water tank from a utility trailer with a forklift dropped the tank when he failed to follow safe forklift operating procedures concerning load manipulation. There was approximately 400 gal of water in the tank that shifted as the tank was lifted and moved. This load instability caused the tank to fall off the forklift to the ground. Although no one besides the forklift operator was in the area when the tank fell and no one was injured, failure to observe safe forklift lifting and operating practices can result in a loss of positive load control and personnel injuries. (ORPS Report ORO--BJC-PGDPENVRES-1999-0007)

The water tank, which is used to supply and recover water used during well-drilling operations, contained potable water and water from the boring process. It measures approximately 5 ft wide by 6 ft long by 5½ ft high and has a half-moon top and a flat bottom. The tank is mounted in a metal frame designed for lifting with a forklift. About 10 gal of water spilled from the tank after it fell. Facility personnel placed absorbent material and a plastic cover over the spilled water and flagged off the area until it can be determined if further spill cleanup actions are required.

Investigators determined that as the forklift operator was placing the tank onto the utility trailer from the rear at a height of approximately 2 ft above the ground, he noticed that the load was not evenly distributed in the trailer. The uneven weight distribution caused the trailer to tilt back towards the forklift. The operator realized that he would have to rearrange the load in the trailer and began to remove the tank from the trailer. Investigators believe that the forklift's tines may not have been fully inserted into the receiving boxes on the tank's frame as the operator backed from the trailer with the tank. They also determined that as the forklift operator cleared the trailer and backed up with the load, he did not tilt the forklift mast back and he did not lower the load towards the ground, as required. As he started forward and turned the forklift, one of the forklift's wheels hit a rut in the ground, which jostled the tank and caused the residual water in the tank to begin to swash around. This created an unstable load and the tank fell forward off the forklift tines and fell to its side onto the ground. Corrective actions being implemented by the prime contractor in response to this event follow.

- Until a full investigation of this event has been completed, all work that involves the lift and movement of well-drilling tanks containing water has been suspended.
- A two-man forklift operations program has been implemented. The two men are the forklift operator and a spotter. The spotter is responsible for guiding and assisting the operator and also for identifying hazards to the operator during lifts and loaded forklift movement.
- The practice of restraining loads to a forklift during lifts and travel is being evaluated.
- All forklift operators and spotters have reviewed forklift operator training.

NFS has reported loss of control of loads during lifting, hoisting, and rigging operations in several Weekly Summaries. Following are some examples.

- Weekly Summary 99-17 reported that two senior journeyman sheet metal workers at the Oak Ridge East Tennessee Technology Park were injured while removing a 2,600-lb section of ventilation ductwork. A fork truck was supporting the duct section when it fell to the floor. The workers had released the duct section from support rods when the load shifted forward and fell off the fork truck tines. As the ductwork fell, it struck the bucket of a manlift, forcibly jostling a worker in the manlift. An 80-lb piece of channel iron under the duct section fell to the floor and tipped over, striking another worker in a different manlift. The worker who was in the manlift bucket experienced lower body stiffness in the hip area and the other worker required 10 stitches to close a forehead wound caused by the blow from the falling channel iron.
- Weekly Summary 98-01 reported that as riggers at the Hanford Site lowered a drum onto a trailer, the drum slipped free of its rigging and fell over. A rigger working on the trailer bed jumped away from the falling load, fell off the trailer, and sustained a head injury. (ORPS Reports RL--PNNL-PNNLBOPEM-1997-0002, RL--PHMC-FSS-1997-0030)
- Weekly Summary 96-51 reported that a construction worker at the Pantex Plant was injured when a 250-lb steel plate knocked him from a stepladder and he fell 4 ft to the floor. Two construction workers were lifting the plate with a hand-operated chain hoist. The chain was not properly rigged, and it came loose when one of the workers shook the load to clear an obstruction. (ORPS Report ALO-AO-MHSM-PANTEX-1996-0239)

On November 14, 1992, at the Oak Ridge K-25 Site, a subcontractor employee was critically injured when a strap around a tank being lifted and repositioned failed, allowing the tank to fall and strike the employee. The employee died five days later as a result of his injuries. A forklift was lifting the 6,800-gal polyethylene storage tank with synthetic tie-down straps encircling the tank and synthetic slings attached to one of the forklift's tines. As the tank was being lifted, one of the tie-down straps failed. The root causes of this fatal accident follow. (ORPS Report ORO--MMES-K25GENLAN-1992-0094; Type A Investigation of the Industrial Accident at the Pond Waste Management Project, Oak Ridge K-25 Site, November 14, 1992)

- Line management did not clearly establish responsibility for safety.
- The subcontractor did not use adequate work control practices and procedures for performing nonroutine maintenance and construction activities nor did the prime contractor effectively implement them in accordance with subcontract provisions.
- The subcontractor failed to establish the expectation that the safety department would be involved in planning and evaluating nonroutine work activities on the site. The prime contractor did not ensure adequate industrial safety oversight and evaluation feedback to project management.
- The work practices and safety culture of temporary employees caused hazards to go unrecognized or to be ignored altogether.

These events illustrate the critical importance of observing safe lifting, hoisting, and rigging practices. Personnel using a forklift to raise, suspend, or move material must understand the basic safe work practices for these maneuvers and must have training, experience, and proficiency in forklift operation. Three causes contributed to the dropped water tank at Paducah: (1) the forklift operator did not tilt the forklift mast back to transfer the load to the forklift after backing the load out of the trailer, (2) the operator did not lower the load towards the ground, and (3) the water sloshing in the tank after the forklift wheel hit the rut in the ground caused the load to become unstable.

All personnel involved in hoisting and rigging and the use of forklifts should understand the following references.

- OSHA regulation 29 CFR 1910.178, *Powered Industrial Trucks*, contains safety requirements related to the maintenance and use of platform lift trucks and fork trucks (forklifts), including operator training requirements. This regulation can be found at http://www.osha-slc.gov/OshStd_data/1910_0178.html.
- OSHA regulation 29 CFR 1926.251, *Rigging Equipment for Material Handling*, applies to slings used in conjunction with other material-handling equipment for the movement of material by hoisting. The types of slings covered are those made from alloy steel chain, wire rope, metal mesh, natural or synthetic fiber rope, and synthetic web. This regulation can be found at http://www.osha-slc.gov/OshStd_data/1926_0251.html.
- DOE-STD-1090-99, *Hoisting and Rigging*, section 3.2, "Operation Evaluation," states that personnel must determine the consequences of a collision, an upset, or dropping of a load. Section 3.3, "Lifting Fixtures," governs the design, fabrication, maintenance, and control of special lifting fixtures and rigging accessories. Chapter 10 and Section 15.5.3, "Forklift Trucks," provide direction concerning forklift operations. Section 11.3 provides requirements for the fabrication and use of wire rope and slings used in hoisting and rigging. This standard can be viewed at <http://tis.eh.doe.gov/whs/bookshelf/std1090.pdf>.

- DOE Office of Oversight publication *Independent Oversight Special Study of Hoisting and Rigging Incidents Within the Department of Energy*, October 1996, analyzes DOE hoisting and rigging incidents between October 1, 1993, and March 31, 1996. It shows that three out of four hoisting and rigging incidents resulted in accidents (defined as fatalities, personal injuries, or property damage). Forklifts caused about one-third of all hoisting and rigging incidents and 38 percent of all accidents. Ninety percent of all forklift incidents resulted in an accident. Inattention to detail and procedures not used or incorrectly used are responsible for most forklift incidents. This special study can be found at http://nattie.eh.doe.gov/web/eh2/reviews/hoist_rig.html.

KEYWORDS: forklift, hoisting and rigging, rigging, tank

FUNCTIONAL AREAS: Hoisting and Rigging, Industrial Safety

4. WORK PLAN VIOLATION CREATES NEAR MISS

On May 27, 1999, at the Portsmouth Gaseous Diffusion Plant, subcontract construction workers violated a work plan for dismantling a prefabricated metal enclosure, causing five roof panels weighing 60 lb each to fall into the enclosure. Another construction worker was inside the enclosure removing clips that attached the roof panels together and was standing under the panels when they fell. The roof panels glanced off a 6-ft stepladder the worker was using and grazed the worker, but he was not injured. In violation of the work plan for dismantling the enclosure, the construction workers had removed all the bolts that fastened the remaining roof panels to the enclosure's walls. Violation of the work plan allowed the roof panels to fall into the enclosure and resulted in a near-miss event that could have caused serious injury. (ORPS Report ORO--BJC-PORTENVRES-1999-0005)

The metal enclosure was the second of two enclosures being dismantled. The enclosures measured 12 ft wide by 8 ft high by 33 ft long and were used as change rooms for employees using personal protective equipment. The roof panels are 3 ft wide by 8 ft long by approximately 2 in. thick and are made of aluminum backed by rigid fiberglass insulation. They are bolted to angle irons that are fastened to the enclosure's walls. Investigators determined that the work plan for dismantling the enclosures required that the construction workers unbolt and remove each roof panel individually. The workers followed this work plan without incident when the first enclosure was dismantled, and they had already removed 7 of the 12 panels from the second enclosure. When the construction workers simultaneously unbolted the remaining five roof panels on the second enclosure, the enclosure's walls flexed and spread, which allowed the roof panels to fall onto the worker inside the enclosure.

NFS has reported failures to follow or implement work control programs in several Weekly Summaries. Some examples follow.

- Weekly Summary 99-04 reported that environmental services subcontractor personnel at the Idaho National Engineering Environmental Laboratory removed a caustic storage tank flange and took a sample from the tank without obtaining authorization for the work. The subcontractors were authorized only to erect scaffolding and there were no plans to open the tank or sample its contents. The facility manager directed that facility construction work be placed on hold until facility personnel could verify if there were additional construction work control issues. (ORPS Report ID--LITC-TRA-1999-0002)

- Weekly Summary 98-50 reported that an electrical engineer at the Rocky Flats Environmental Technology Site Broomfield Warehouse accidentally contacted an inadequately wrapped, bolted 480-V cable connection with a clamp-on ammeter, causing an electrical arc and a blown fuse in the power distribution panel. Investigators determined that because the Broomfield warehouse is off-site and is not a DOE facility, no one implemented the necessary work control programs or safety measures. (ORPS Report RFO--KHLL-371OPS-1998-0085)
- Weekly Summaries 98-30, 98-33, 98-38, and 98-43 reported an event in which a high-pressure carbon dioxide (CO₂) fire suppression system unexpectedly activated, resulting in one fatality, several life-threatening injuries, and significant risk to the safety of the initial rescuers. A Type A Accident Investigation Board Report identified two root causes for the accident. First, Lockheed Martin Idaho Technologies Company (LMITCO) did not have a systematic method for identifying, institutionalizing, or implementing requirements for the design, installation, and work conducted on or affected by the CO₂ fire suppression system. Second, the DOE Idaho Operations Office and LMITCO management had accepted unstructured work controls, which helped to increase industrial safety risks to workers. (Weekly Summaries 98-30, 98-33, 98-38, and 98-43; Type A Accident Investigation Board Report on the July 28, 1998, Fatality and Multiple Injuries Resulting from the Release of Carbon Dioxide at Building 648, Test Reactor Area, Idaho National Engineering and Environmental Laboratory; ORPS Report ID--LITC-TRA-1998-0010)

These events underscore the importance of an integrated approach to safety that stresses individual and management accountability and ownership, implementation of requirements and procedures, and thorough and systematic management oversight. The responsibility for ensuring adequate planning and control of work activities resides with line management. Managers should ensure that work control processes are followed and facility practices are enforced.

Personnel at DOE facilities should have a continually questioning attitude toward safety issues. Each individual is ultimately responsible for complying with rules to ensure personal safety. Facility managers should communicate the idea that safety is of prime importance and that all personnel must be committed to excellence and professionalism. Instructions to workers should emphasize that changes in work methods or equipment, or any other deviation from an approved work plan, can introduce unforeseen hazards. Changes to approved work methods, equipment, and plans must receive the same hazard analysis, review, and approval as the original work plan. Any change should entail a work stoppage combined with a thorough review of the potential hazards associated with the change.

Personnel at DOE facilities are required to follow established work control plans without exception. Facility managers, work planners, and subcontractor supervisors should review the following references, which provide guidance and good practices for implementing work control plans.

- DOE O 4330.4B, *Maintenance Management Program*, section 6.2, states that deficient procedures and failure to follow procedures are major contributors to many significant and undesirable events. Section 7 provides guidance for planning, scheduling, and coordinating work activities. Section 8.3.6 states that nonfacility contractor and subcontractor personnel should be trained and qualified for the work they are to perform. It also states that subcontractor personnel should perform work to the same high standards expected of facility personnel and that subcontractor managers should be held accountable for the work performance of their personnel.

- DOE-STD-1053-93, *Guideline to Good Practices for Control of Maintenance Activities at DOE Nuclear Facilities*, provides extensive guidance for the development of work control plans and the supervision of maintenance activities.

Integrated safety management information can be found at <http://tis-nt.eh.doe.gov/ism>. DOE technical standards are at <http://www.doe.gov/html/techstds/standard/standard.html>.

KEYWORDS: construction, contractor controls, supervision, work planning

FUNCTIONAL AREAS: Industrial Safety, Work Planning

5. WORKERS EXPOSED TO SILICA DUST DESPITE RECENT LESSONS LEARNED

OEAF engineers reviewed two recent occurrences at Lawrence Livermore National Laboratory involving employee exposures to silica dust above the permissible exposure limit.

In both occurrences, workers were jack hammering through concrete floors when work was stopped because the jack hammering was creating excessive amounts of dust. Also, in both occurrences workers initially wore inadequate respiratory protection. The second occurrence could have been prevented if control measures and lessons learned identified from the earlier of the two occurrences had been fully communicated to all workers and placed into procedures. Overexposure to silica can cause a disabling and sometimes fatal lung disease called silicosis. (ORPS Reports OAK--LLNL-LLNL-1999-0018 and OAK--LLNL-LLNL-1999-0007)

On May 10, 1999, facilities management subcontractor workers were repairing a drain that required saw cutting and jack hammering through a concrete floor inside a building. Work was stopped because of concerns over the amount of dust being raised in the hallway adjacent to the work area. On May 11, work resumed, with workers wearing additional personal protective equipment and using wet methods to control dust. In addition, personnel collected air samples. Sample test results were received on June 1, 1999. They indicated that the workers had probably received an overexposure to silica dust during work on May 10.

On February 10, 1999, two employees used jackhammers to remove anchor bolts embedded in a concrete floor. Engineering controls consisted of fully opening a large roll-up door at one end of the facility and using an exhaust fan ducted to the building exterior. Personal protective equipment consisted of hearing protection, coveralls, hard hats, safety shoes, and gloves. The two employees obtained dust masks from co-workers and wore them while they used the jackhammers. A supervisor stopped work because of the extensive spread of dust after approximately one hour of work. The project manager met with representatives of the crafts, hazards control, and the facility to discuss the project. Based on that discussion, workers built a local dust containment system around the work area, connected the exhaust fan to the top of the enclosure, extended the duct further away from the building, used water sprayers to suppress dust generation, and wore full-face respirators with dust cartridges. An industrial hygienist directed employees to wear personal sampling pumps. Based on an analysis of personal samples collected during work on February 11, the industrial hygienist stated on March 3 that the employees may have been overexposed to silica on February 10.

Occurrence investigators determined the following causes of the February 10 event.

Direct Cause – Procedure Problem (Defective or Inadequate Procedure). The work procedure failed to specify the proper personal protective equipment.

Contributing Cause 1 – Personnel Error (Communication Problem). During the pre-start meeting, the project manager did not maintain firm control of the meeting participants. The project manager should have halted the meeting when multiple conversations were occurring, to ensure that all issues of concern were heard by all attendees, addressed, and properly resolved.

Contributing Cause 2 – Procedure Problem (Lack of Procedure). There is no standardized work procedure for the use of jackhammers inside buildings. The use of a standard procedure would have immediately identified the appropriate controls before the start of work.

Root Cause – Management Problem (Inadequate Administrative Control). The work planning and control process used by the project manager for this project failed to identify all the hazards associated with this work. The project work plan was imprecise and did not clearly identify all hazards and the methods to mitigate those hazards. It did not receive a proper evaluation, which would have specified the controls needed to address the hazards.

The facility manager proposed corrective actions to address the causes of the February 10 event. These corrective actions included (1) developing a standardized procedure for the use of jackhammers and other high-impact tools for use inside buildings, (2) discussing the implications of this incident during a one-day stand-down, (3) developing a formal lessons learned, and (4) discussing with personnel the precautions necessary for using jackhammers indoors. Items (1) and (3) had target completion dates of June 15 and June 4, 1999. Items (2) and (4) were completed in March 1999.

Facility managers were in the process of implementing lessons learned from the February 10 event when very nearly the same event happened again on May 10, once more involving facilities management subcontractor workers.

The following elements were common to both events.

- Managers ordered work to be suspended and controls re-evaluated because of the amount of dust generated by using power tools on concrete.
- Workers initially wore only dust masks for respiratory protection.
- Wet methods were not initially used to control dust.
- Personnel air samples collected during subsequent work (when workers were using additional controls to suppress dust) indicated that an overexposure to silica had probably occurred during work that was conducted before the additional controls were implemented.

Lawrence Livermore National Laboratory facility management was in the process of developing new procedures for ensuring that adequate controls were developed and implemented to prevent recurrence. However, the actions taken to apply the lessons learned from the February 10 event had not been implemented uniformly throughout the organization. As a result, the health hazards associated with using power tools on concrete were not fully communicated and adequate controls to protect employees were not used.

Health hazards associated with overexposure to silica include a disabling and sometimes fatal lung disease called silicosis. There is no cure for silicosis. There are three types of silicosis, depending on the airborne concentration of crystalline silica to which a worker has been exposed.

- Chronic silicosis, which usually occurs after 10 or more years of overexposure.
- Accelerated silicosis, which results from higher exposures and develops over 5 to 10 years.
- Acute silicosis, which occurs where exposures are the highest and can cause symptoms to develop within a few weeks or up to 5 years later.

Additional information on silicosis is available from the National Institute for Occupational Safety and Health (NIOSH). To obtain a tip sheet of ideas for preventing silicosis and a guide for working safely with silica, call 1-800-35-NIOSH; select option 2, then option 5. Outreach materials for OSHA's special program on silicosis may be obtained at <http://www.osha-slc.gov/Silica/SeventyEight.html>

NFS encourages managers to incorporate lessons learned into their programs and daily operations. Lessons learned are valuable only if the information learned from them is applied and shared within the facility, the site, and the DOE complex in a timely manner. DOE-STD-7501-95, *Development of DOE Lessons Learned Programs*, was designed to promote consistency and compatibility across programs. Both lessons learned managers and program managers should review the standard and incorporate applicable elements into their site programs. Managers, supervisors, and operators should review lessons learned documents for applicability, and the information should be used to improve operations and protect equipment and personnel.

Recent changes in the DOE mission will result in more activities requiring the use of power tools on concrete indoors as facilities are altered and equipment is removed in preparation for mission changes or as facilities are demolished. Managers, supervisors, and Environmental, Safety, and Health technical support personnel involved in work planning should ensure that work control processes are being followed and that all work-related hazards are evaluated to reduce worker exposure to hazards and to prevent injury or illness. Work planners should ensure that work packages adequately address actual and potential job task and workplace hazards. Workers are required to be involved in the Integrated Safety Management System during the work planning phases to help identify and mitigate work hazards. Requirements and guidance for worker protection can be found in the following documents.

- DOE O 440.1, *Worker Protection Management for DOE Federal and Contractor Employees*, states that the contractor must identify workplace hazards and evaluate the risk of associated worker injury or illness.
- DOE G 440.1-3, *Occupational Exposure Assessment*, provides methods to characterize and monitor workers' potential and actual exposures to hazardous agents as part of a comprehensive worker protection program.

DOE technical standards can be found at <http://www.doe.gov/html/techstds/standard/standard.html>

KEYWORDS: air sampling, concrete, job hazard analysis, lessons learned, respirator

FUNCTIONAL AREAS: Lessons Learned, Operating Experience

6. INADEQUATE EMERGENCY RESPONSE TO CHEMICAL SPILL

On June 2, 1999, at Los Alamos National Laboratory (LANL), a 1-liter glass bottle of methyl acrylate fell out of an explosion-proof refrigerator and broke on the floor of a room at the Plutonium Processing and Handling Facility. Vapors from the spill quickly dispersed into the room, forcing three personnel to evacuate. The facility incident commander directed a precautionary evacuation of certain areas of the facility. He also requested assistance from the LANL HAZMAT team and notified the LANL emergency management and response (EM&R) team. A spill response team entered the room wearing Level B personal protective equipment and self-contained breathing apparatus. They used a photo-ion detector to determine the level of combustible vapor. Methyl acrylate, a primary component of super glue, is highly flammable and is to be isolated from potential ignition sources. The team entered the room without taking appropriate precautions to prevent ignition of the vapors or to respond to a fire if one had occurred. (ORPS Report ALO-LA-LANL-TA55-1999-0032)

Two Waste Management/Environmental Compliance group employees had entered the room to remove from the refrigerator hazardous waste that was scheduled for disposal. They wore lab coats, safety glasses, and surgeon's gloves. A Materials Science and Technology employee was also in the room at the time of the event. When one of the Waste Management/Environmental Compliance group employees opened the refrigerator door, the bottle fell and shattered when it hit the floor, splashing methyl acrylate on the employee's shoes and pants. As a precaution, the three personnel in the room and three others in the area went to occupational medicine for evaluation. All six were released to return to work the same day.

Investigators determined that the methyl acrylate had been properly stored according to the manufacturer's instructions and in the original container. Methyl acrylate should be stored in a sealed container and in a cool, dark, and fireproof location. The reason the bottle fell will probably not be determined with any degree of certainty. The spill response team used Level B protection based on its general knowledge of the chemical inventory in the room. They entered the room and identified the chemical from the label on the broken container. The entry was not without risk: although the refrigerator in which the chemical was stored was explosion-proof, there was other electrical equipment in the room that was not explosion-proof and could have ignited the vapors. The facility manager held a critique of the event and critique members identified the following issues.

- LANL EM&R personnel who responded were never briefed by facility personnel. As a result, they did not assume command of the event, even though facility procedures require the command to be transferred to EM&R if the facility does not have adequate resources to handle an event. The fact that the facility called for the HAZMAT team and used the services of occupational medicine was a sign that it did not have the necessary personnel to deal with the event, so EM&R should have assumed the role of incident commander.

- No one was concerned about the flammability of the chemical. No one called the fire department to respond as a precautionary measure. If the methyl acrylate had ignited, a fire could have quickly spread through the rest of the lab. Also, if a fire had occurred when the spill response team entered the room, they could have been severely burned. The only protection for personnel in case of fire was a chemical safety shower located just outside the door of the room.

NFS has reported other events involving inadequate emergency response in the Weekly Summary. Some examples follow.

- Weekly Summary 99-14 reported that during a chlorine leak at the Hanford Site the emergency response team was not totally familiar with the facility systems. Plant operators had to tell them how to isolate chlorine cylinders and how to reset alarms to determine if they were still detecting chlorine. (ORPS Report RL--PHMC-S&W-1999-0002)
- Weekly Summary 99-11 reported that communications between emergency responders and management during a fire at the Portsmouth Gaseous Diffusion Plant were ineffective, with the result that management did not fully realize the scope and consequences of the fire until 6 hours after it was extinguished. (NRC Region III Augmented Inspection Team Review of the December 9, 1998, Fire at the Portsmouth Gaseous Diffusion Plant, Report No. 070-7002/98019; NRC Event No. 35132; ORPS Report ORO--BJC-PORTENVRES-1998-0020)
- Weekly Summary 98-50 reported that a researcher at the Pacific Northwest National Laboratory did not immediately notify his manager or emergency response personnel after a vessel ruptured and expelled a mixture of 130 degrees centigrade trichloroethylene, hydrogen peroxide, and soil approximately 8 ft from the face of a fume hood. Although the researcher knew there was a potential for fire, he stayed in the vicinity approximately 1 hour to make sure that there were no further reactions and no fires. (ORPS Report RL--PHMC-PNNLBOPER-1998-0022)
- Weekly Summary 98-25 reported that facility personnel at the Rocky Flats Environmental Technology Site waited approximately 30 minutes before reporting a 2-gallon spill of radioactive phosphoric acid. Also, personnel in the spill area did not observe restrictions on eating, drinking, and smoking, and some workers assisted emergency operations personnel without wearing personal protective equipment. (ORPS Report RFO--KHLL-LIQWASTE-1998-0002)

These events underscore the importance of adequately responding to site emergencies. Facility safety precautions and emergency procedures should provide workers with the information they need to ensure proper response to the emergency. DOE issued *Health and Safety Plan Guidelines* for the preparation of site-specific health and safety plans. The guidelines are based on the minimum requirements of 29 CFR 1910. Section 11.3 states that site emergency response plans should identify and define the roles of all personnel, organizations, and teams who will participate in emergency response. It also states that organizational structures should (1) have a clear chain of command, (2) ensure everyone knows his or her position and authority, (3) be flexible enough to handle multiple emergencies, and (4) clearly identify specific roles and responsibilities. DOE's *Health and Safety Plan Guidelines* is available at <http://tis.eh.doe.gov/docs/hasp>.

KEYWORDS: chemical spill, flammable, hazardous material, volatile

FUNCTIONAL AREAS: Chemistry, Fire Protection, Industrial Safety

7. SPARK FROM CUTTING TORCH CAUSES GRASS FIRE

On June 4, 1999, at Sandia National Laboratory—Albuquerque, construction contractors were using a cutting torch to remove a large I-beam from the exterior of a building when a spark, blown by high winds, caused a grass fire. The fire burned approximately 1,200 square feet of weeds and brush on top of a bunker. The contractor attempted to extinguish the fire using a fire extinguisher. Other contractors in the area responded with a water tanker to help control the fire until the fire department arrived. The fire damaged a cable on the bunker, and the inside of the building may have suffered smoke damage. The contractor was cutting without a hot-work permit and without a fire watch in conditions that were dry and hot, with 25-30 mph winds gusting to 40 mph. (ORPS Report ALO-KO-SNL-NMFAC-1999-0009)

While responding to the fire, a contractor employee fell off the water tanker truck and a Sandia employee was struck in the chest when a pressurized hose disconnected from the tanker. Both employees were treated by medical personnel and released for work. Investigators have not yet assessed the actual damages.

Investigators determined that there had been no discussion of the weather or its potential to start a fire. Nevertheless, the area where the contractors were working was posted "Extreme Fire Danger." Investigators determined that not only did the contractor not have a permit and fire watch, but the fire extinguisher used was not rated or sized for the activity being performed and the area was not wetted or cleared of debris before cutting. Currently, Sandia's hot-work permit process does not address wind or environmental restrictions. Facility managers will evaluate this process to determine if environmental or weather conditions need to be integrated into the hot-work permit process.

NFS has reported numerous other events involving fires started by sparks from cutting, grinding, or welding in previous Weekly Summaries. In many of these events, fire resulted when workers did not adequately review the work area for combustible materials or identify all possible paths for sparks or hot metals.

- Weekly Summary 98-49 reported that an explosion ejected weld material from a Cadweld crucible mold ignited a grass fire at the base of an explosives magazine at the Pantex Plant. Wind spread the fire to a second location on the slope of the magazine. (ORPS Report ALO-AO-MHSM-PANTEX-1998-0068)
- In a 1994 event at Los Alamos National Laboratory, a spark from a pipe-cutting operation passed through the open-ended pipe being cut to the outside of the building and fell to the ground, starting a grass fire. The grass fire caused an 8-foot-by-10-foot area of tar paper on the exterior wall of the building to burn. (ORPS Report ALO-LA-LANL-DPWEST-1994-0004)

In June 1991, the Office of Environment, Safety, and Health issued Bulletin 91-3 (DOE/EH-0196), *Fire Prevention Measures for Cutting/Welding Activities*. According to the bulletin, more than 100 fires occurred at DOE facilities in the previous year, most of which resulted from failure to follow precautionary practices such as isolation of combustibles in the surrounding work area, use of fire watches, adequate authorization and supervision, compliance with Occupational Safety and Health Administration (OSHA) fire protection requirements, and management commitment to fire prevention. OSHA regulation 29 CFR 1917.152, "Welding, Cutting and Heating (Hot Work)," provides the following guidance.

- To the extent possible, hot work shall be performed in designated locations that are free of hazards.
- When hot work must be performed in a location that is not free of hazards, all necessary precautions shall be taken to confine the heat, sparks, and slag so that they cannot contact flammable or combustible material.
- Fire-extinguishing equipment suitable for the location shall be immediately available and shall be maintained in readiness for use at all times.
- When the hot work operation is such that normal fire prevention precautions are not sufficient, additional personnel shall be assigned to guard against fire during hot work and for a long enough time after completion of the work to ensure that no fire hazard remains. The employer shall instruct all employees involved in hot work operations about potential fire hazards and the use of firefighting equipment.

This event illustrates the importance of performing cutting or welding operations under an approved hot-work permit that addresses precautions such as fire watches, extinguishing equipment, and barriers. Personnel responsible for preparing and issuing permits for cutting, welding, or burning should also consider weather and environmental factors such as high winds and extremely dry conditions.

Other information regarding cutting and welding safety can be found in the following documents.

- *Industrial Fire Hazards Handbook*, 3rd ed., National Fire Protection Association, Quincy, Massachusetts, 1990.
- Standard 51B, *Cutting and Welding Processes*, National Fire Protection Association, Quincy, Massachusetts, 1992.
- *Brazing Safely*, American Welding Society, Miami, Florida, 1992.
- *Arc Welding Safely*, American Welding Society, Miami, Florida, 1988.
- *Oxyfuel Gas Welding, Cutting, and Heating Safely*, American Welding Society, Miami, Florida, 1992.
- *Safe Practices*, American Welding Society, Miami, Florida, 1992.
- ANSI/ASC Z49.1-1988, *Safety in Welding and Cutting*, American Welding Society, Miami, Florida, April 5, 1988.

KEYWORDS: burn, fire, fire protection, fire watch, welding, wind

FUNCTIONAL AREAS: Fire Protection, Industrial Safety

PRICE-ANDERSON AMENDMENTS ACT INFORMATION

1. PRELIMINARY NOTICE OF VIOLATION AND PROPOSED CIVIL PENALTY AT HANFORD

On May 26, 1999, the DOE Office of Enforcement and Investigation issued a Preliminary Notice of Violation to Fluor Daniel Hanford, Inc. (FDH) and proposed a \$330,000 civil penalty under the Price-Anderson Amendments Act (PAAA) for deficiencies in work process, design, procurement, and quality improvement at the Spent Nuclear Fuels Project (SNFP), K-Basins, and other Project Hanford Management Contract (PHMC) facilities. The deficiencies include (1) failure to adhere to work process procedures and controls, (2) failure to adequately qualify and provide oversight of subcontractors, (3) failure to control design information, and (4) failure to establish an effective quality improvement process that would prevent a recurrence of these deficiencies. (NTS-RL-PHMC-KBASINS-1997-0001, -0002, -0004, and -0005; NTS-RL-PHMC-KBASINS-1998-0001; NTS-RL-PHMC-SNF-1997-0001, -0002, -0011, -0014, and -0021; Letter, DOE (D. Michaels) to Fluor Daniel Hanford, Inc. (R. Hanson), 05/26/99)

VIOLATIONS PERTAINING TO QUALITY ASSURANCE DEFICIENCIES

The DOE Office of Enforcement and Investigation identified quality assurance deficiencies in the areas of procurement, design, quality improvement processes, and work processes. These violations, which resulted in a proposed civil penalty of \$275,000, are delineated as follows.

Procurement

Investigators determined that FDH and its major subcontractors failed to ensure that procured items and services met established requirements in accordance with 10 CFR 830.120(c)(2)(iii), "Procurement."

- Fluor Daniel North West (FDNW), an FDH subcontractor, allowed another subcontractor to provide nuclear facility design work affecting nuclear safety without an approved quality assurance (QA) program. This arrangement was in place over a period of 10 months while significant deficiencies in the subcontractor's QA program were known to FDNW.
- Duke Engineering and Services Hanford (DESH), an FDH subcontractor, contracted another subcontractor to procure components and fabricate a system that included safety class components, even though the other subcontractor was not approved for safety-class system fabrication. The subcontractor's QA program was incomplete and there were two significant nonconformance reports on deficiencies in its implementation.

Design

Investigators determined that FDH and its major subcontractors failed to ensure that design items and processes met established requirements in accordance with 10 CFR 830.120(c)(2)(ii), "Design." The following violations were cited.

- A QA surveillance found that DESH and Chem Nuclear Systems Incorporated (CNSI) had not established controls for design changes. Also, the vendor certification process did not evaluate CNSI's QA program to learn if CNSI would qualify to provide design engineering services for nuclear structures, systems, and components projects.
- A sub-tier subcontractor submitted a design package on a subsystem for the SNFP that had not been verified and validated by an independent review, as required by the FDH QA implementation plan.

Quality Improvement Processes

Investigators determined that FDH did not implement a quality process to detect and prevent quality problems in accordance with 10 CFR 830.120(c)(1)(iii), "Quality Improvement Processes." In addition, it failed to correct identified problems to prevent recurrences. The following violations were cited.

- The DOE Richland Operations Office (DOE-RL) issued a letter to FDH that identified continuing QA program deficiencies at the SNFP. The letter indicated that QA program requirements were not being properly implemented by line management. The QA programmatic concerns included (1) instances where design work did not comply with QA requirements, (2) instances where work activities did not implement quality requirements, (3) failure to ensure that unreviewed safety question evaluators met training requirements, and (4) lack of an effective event investigation program.
- A DOE-RL review of the DESH SNFP corrective action management system determined that (1) corrective actions for significant noncompliances were not adequately closed by the due dates, (2) corrective actions for incomplete design reviews were not sufficient to prevent recurrence, (3) PAAA requirements were not identified in subcontracts and vendor procurements, (4) there was no functioning process to trend minor PAAA noncompliances, and (5) root cause identification and corrective actions for minor PAAA noncompliances were not always complete and closed on time.
- DOE-RL issued a letter to FDH identifying significant quality deficiencies across the PHMC activities. These sitewide deficiencies included (1) ineffective implementation of corrective action management and trend evaluation processes for PHMC, (2) multiple instances where design work did not comply with QA program requirements, (3) ineffective QA program implementation and corrective action management for the Hanford Site Calibration Laboratory, (4) ineffective implementation of the deficiency tracking system, and (5) inattention to correcting QA program and implementation inadequacies that allowed uncorrected known deficiencies to continue.

Work Processes

Investigators determined that FDH and its major subcontractors failed to perform work to established technical standards and administrative controls using approved instructions, procedures, or other appropriate means in accordance with 10 CFR Part 830.120(c)(2)(i), "Work Processes." The following violations were cited.

- Operators had stored several single-fuel-element canisters in the 105KW Basin West Bay, which was inconsistent with the facility technical safety requirement. An unreviewed safety question evaluation performed before the canisters were moved into this area failed to consider the technical safety requirement in the evaluation.
- Personnel load-tested the 105KW Basin monorails using a 3,000-lb test load that exceeded a 1,700-lb limit established in the K-Basins safety analysis report.
- Personnel did not complete technical safety requirement surveillances in the required time frames (the surveillances involved railroad switch position inspections and inspection for loss of water) and did not perform leakage calculations at K-Basins.
- On two occasions, personnel discovered mispositioned fuel canisters at the 105KE Basin spent fuel rack. This is an unanalyzed condition for seismic loads.
- Operators dropped a canister containing 14 fuel pieces in the 105KE Basin during a planned movement of fuel. During the movement, no certified operators verified proper engagement of the lifting hook, as required by procedure.
- FDH made changes to selected material identification markings when nonconformance with the procurement specifications was identified and then failed to initiate the nonconformance reports required by their procedures.

VIOLATIONS PERTAINING TO INFORMATION REQUIREMENTS

The DOE Office of Enforcement and Investigation determined that FDH did not comply with 10 CFR 820.11(a), which requires that any information pertaining to a nuclear activity provided to DOE by any person shall be complete and accurate in all material respects. The following violations, which resulted in a civil penalty of \$55,000, were cited.

- FDH had submitted a document to DOE in which it represented that it did not consider the addition of signatures and dates on radiological hold points associated with a work package at the K-Basins to constitute back-dating; rather, the practice reflected real-time recording. DOE investigators established that the hold points were improperly documented.
- FDH provided DOE with copies of three radiological survey reports that FDH represented formed the basis for a health physics technician's decision to document the hold points. DOE established that FDH had failed to include a radiological survey report that would have supported a check for baseline contamination levels.
- FDH provided a copy of a radiological survey report that, along with two other surveys, formed the basis for its health physics technician's decision to document one of the hold points. DOE established that this survey was not performed in a manner that satisfied the requirements of the hold point.
- DOE questioned why one of the surveys was not documented until a month after it was purportedly performed. FDH represented that for reasons of time and attendance, its health physics technician did not have the opportunity to document the survey until later. DOE established that the survey was documented late because the supervisor of the health physics technician told him to create the document.

NFS has reported recent Notices of Violations under the PAAA in Weekly Summaries 99-20, 98-51, 98-49, 98-42, 98-41, 98-40, 98-26, 98-15, and 98-11.

Under the provisions of the Price-Anderson Amendments Act, DOE can fine contractors for violations of Department rules, regulations, and compliance orders relating to nuclear safety requirements. DOE contractors who operate nuclear facilities or who perform nuclear activities and fail to remain in compliance with such requirements could be subjected to Price-Anderson civil penalties under the work processes and quality improvement provisions of 10 CFR 830.120, *Quality Assurance Requirements*, and/or 10 CFR 835, *Occupational Radiation Protection*. These actions include Notices of Violation and, where appropriate, nonreimbursable civil penalties.

The primary consideration for determining whether DOE takes enforcement action is the actual or potential safety significance of a violation, coupled with how quickly the contractor acts to identify and correct problems. The Office of Enforcement and Investigation may reduce penalties when a DOE contractor promptly identifies a violation, reports it to DOE, and undertakes timely corrective action. DOE has the discretion not to issue a Notice of Violation in certain cases.

KEYWORDS: enforcement, Price-Anderson Act, procurement, quality assurance

FUNCTIONAL AREAS: Lessons Learned, Licensing/Compliance, Procurement

OEAF FOLLOW-UP ACTIVITY

1. OPERATING EXPERIENCE WEEKLY SUMMARY TO BE AVAILABLE VIA E-MAIL

The Office of Nuclear and Facility Safety will soon be able to send a .pdf version of the OEWS directly to your e-mail. Here are just a few benefits you'll see when you have an electronic copy sent "straight to your desktop."

- **Faster delivery.** The OEWS will arrive in a fraction of the time it takes to get your current hard-copy version.
- **Full color.** Pictures, drawings, and charts are in full color, so you can copy and paste them whenever you'd like.
- **Easily reproducible.** You can forward the electronic OEWS file to others who might be interested in reading it, or you can print out black-and-white or color copies at your computer for distribution.

To take advantage of the new electronic OEWS, all you need is an e-mail address and a .pdf reader, such as the Adobe Acrobat Reader. The Acrobat Reader is free and can be downloaded from the Adobe website at <http://www.adobe.com/prodindex/acrobat/readstep.html>.

Instructions for subscribing to the electronic distribution list will be published in an upcoming OEWS.